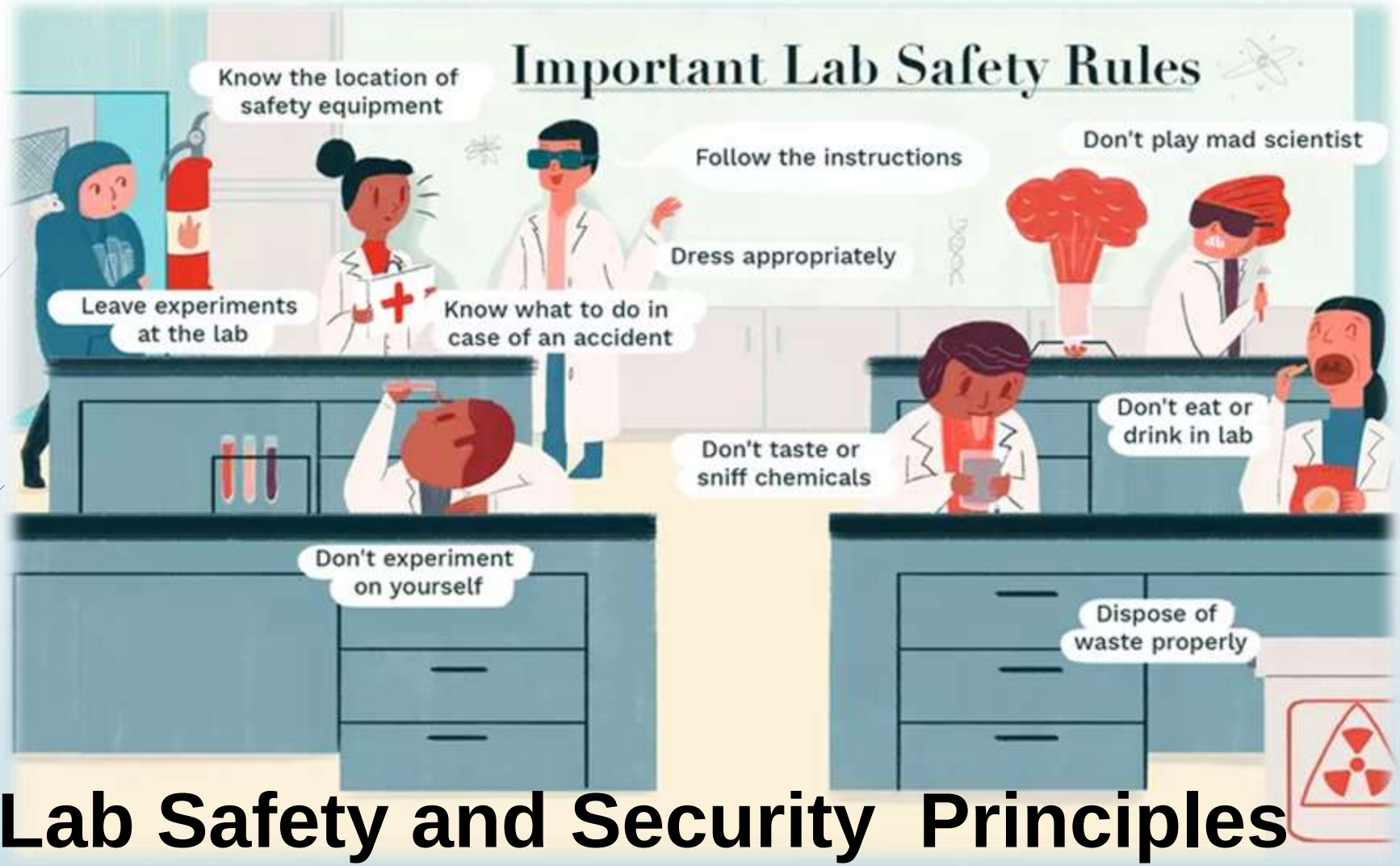


Lab Safety and Security Principles

Alaa J.Mahrath

Chemistry and Biochemistry Department – College of Medicine – Univ.Babylon

E.mail: jafermohrath.alaa@uobabylon.edu.iq

How to be safe in side the lab !

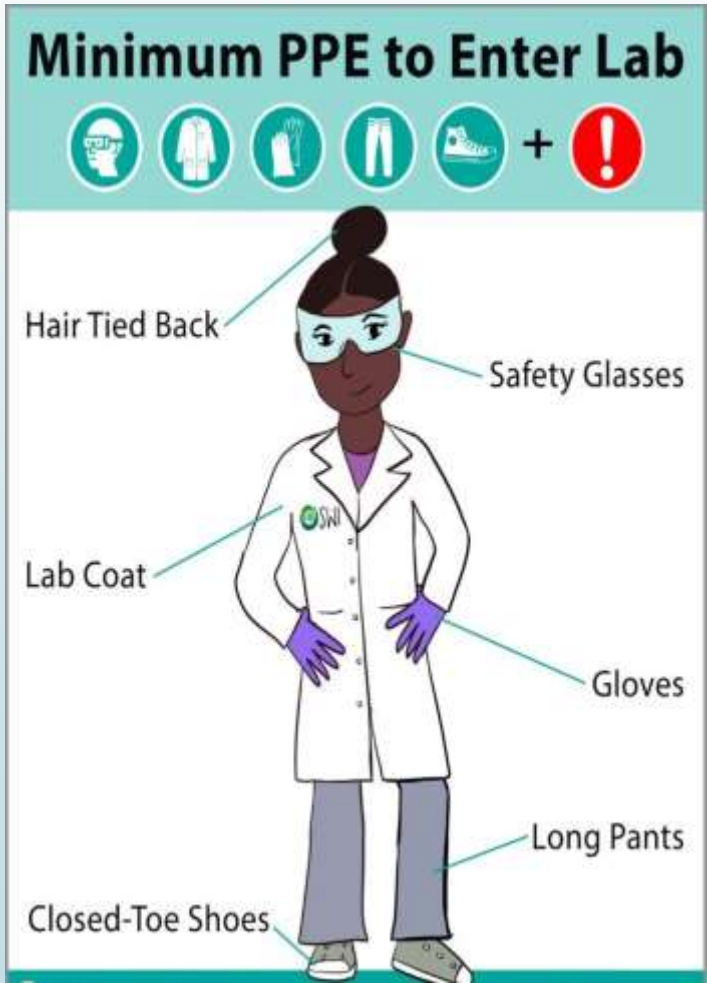
- It is essential to follow safety and security when working in laboratory settings.
- Laboratories cause various hazards, including chemical, biological, physical, and radiation hazards.
- Understanding proper safety measures is important to protect yourself, your colleagues, and the environment.
- Here are some important **lab safety and security guidelines.**

1. Adapt Yourself with Laboratory Rules and Protocols:

- Begin by Adapting yourself with the laboratory rules and protocols specific to your institution.
- These guidelines will outline safety procedures, emergency protocols, and the proper use of equipment and reagents.
- Adhere to these rules at all times.

2. Wear Appropriate Personal Protective Equipment (PPE):

- **Always** wear the necessary personal protective equipment **(PPE)** when working in the laboratory.
- This typically includes a lab coat or gown, gloves, safety goggles or a face shield, and closed-toe shoes.
- **PPE** acts as a barrier and protects you from potential hazards.



3. Handle Chemicals Safely:

A. Read and understand the safety data sheets **(SDS)** provided for each chemical.

B. Always work in a well-ventilated area. If necessary, use **a fume hood** to prevent exposure to hazardous fumes or vapors.

C. Handle chemicals with care, and avoid direct contact with skin or eyes. Use appropriate tools, such as pipettes or spatulas, to transfer and mix chemicals.

D. Label and store chemicals properly, following the recommended storage conditions and isolation guidelines.

4. Practice Good Laboratory Hygiene:

- **A.** Maintain a clean and organized workspace. Keep the laboratory benches and equipment clean
- **B.** Wash your hands carefully with soap and water before and after working in the laboratory. This helps prevent cross-contamination and the spread of pathogens.
- **C. Avoid** eating, drinking, cellphone, or applying cosmetics in the laboratory to minimize the risk of contamination.

5. Handle Biological Materials Safely:

- **A.** Follow proper procedures when working with potentially infectious materials. This includes wearing appropriate PPE, using biological safety cabinets when necessary, and following established protocols for handling, storing, and disposing of biological samples.
- **B.** Be aware of the potential hazards associated with bloodborne pathogens and take appropriate precautions, such as practicing universal precautions and using sharps containers for safe disposal of needles and other sharp objects.

6. Be Cautious with Laboratory Equipment:

- **A.** Before using any laboratory equipment, ensure that you have received proper training on its operation and safety features.
- **B.** Inspect equipment for any damage or malfunction before use. Report any questions to the appropriate supervisor .
- **C.** Use equipment as intended and follow the manufacturer's instructions. Do not modify equipment without authorization.

7. Respond to Emergencies:

- **A.** Familiarize yourself with the location and proper use of safety equipment, including fire extinguishers, eyewash stations, safety showers, and emergency exits.
- **B.** Know the emergency procedures specific to your laboratory, including evacuation plans and protocols for spills, fires, and injuries.
- **C.** In the event of an emergency, remain calm and follow the established protocols. Notify your instructor or supervisor immediately.

Pictograms of Hazards

Flammable

Oxidizing

Corrosive

Compressed Gas

Health Hazard

Explosive

Harmful / Irritant

Toxic

Harmful to the Environment

Biohazardous Infectious Material

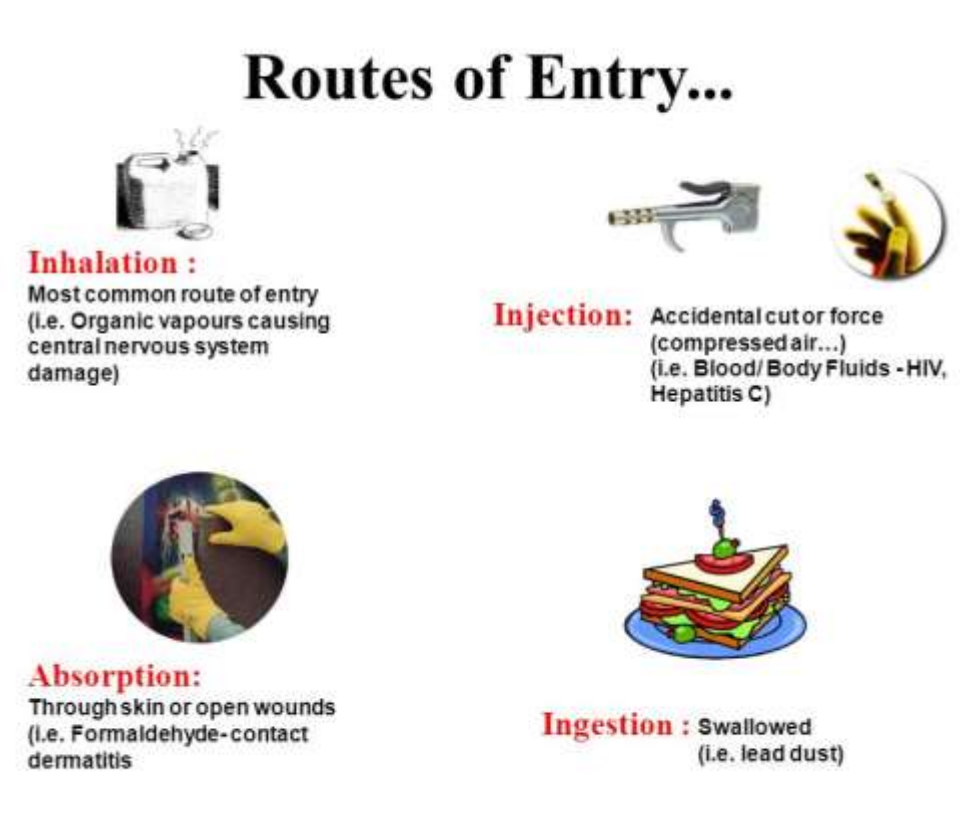
Exposure to Hazards

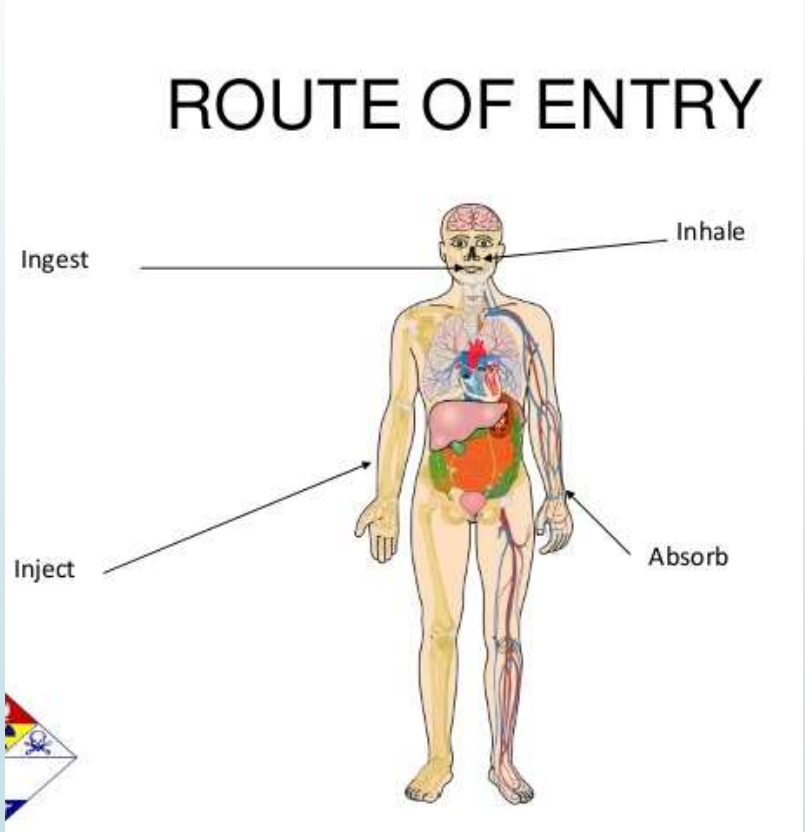
- **Dose** – the amount of a chemical or agent that actually enters the body. The actual dose that a person receives depends on the concentration, frequency and duration of the exposure:

- **In general, the greater the dose, the more severe the health effects**

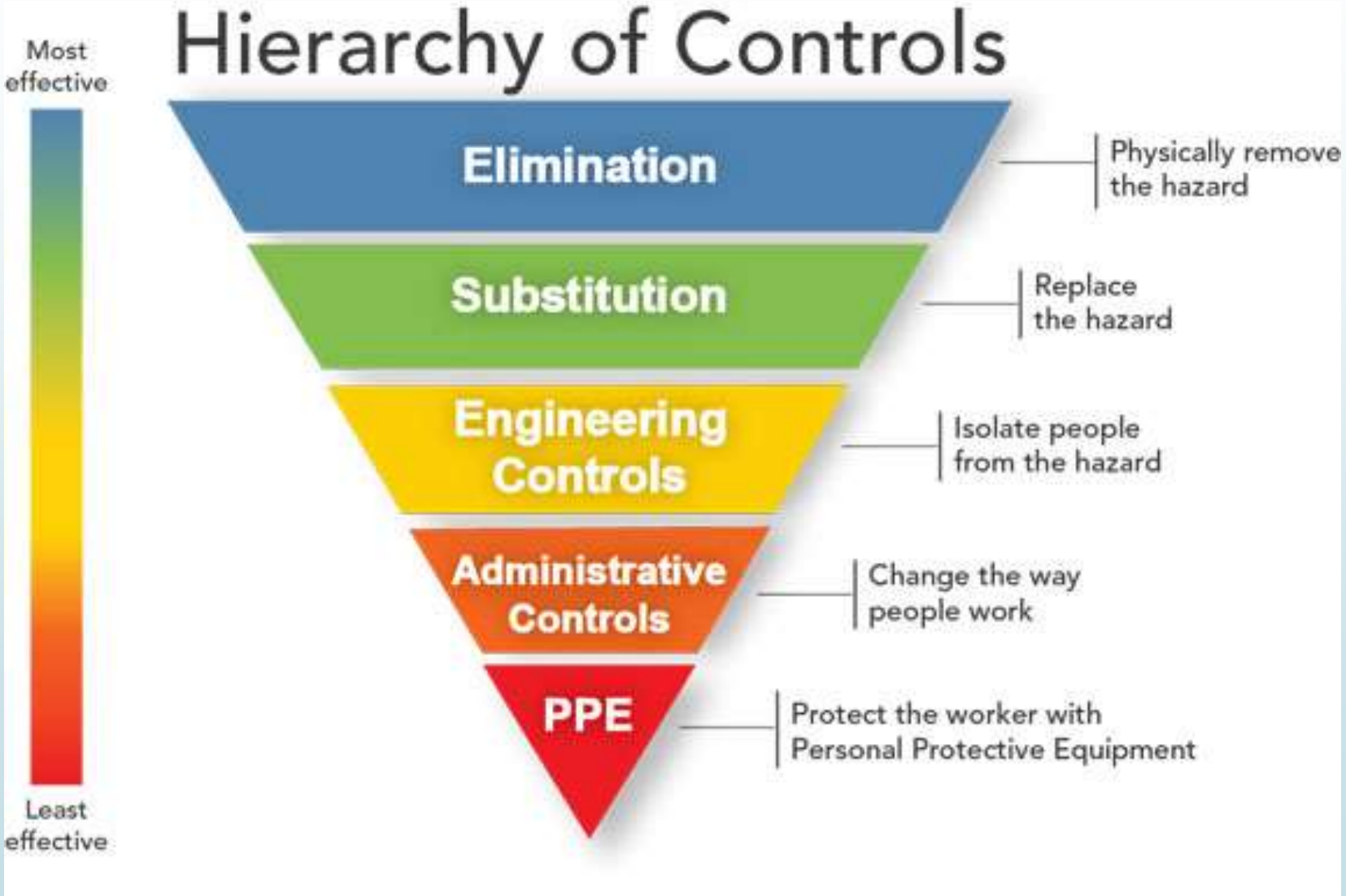
- **Individual exposure** – not all people exhibit the same signs and symptoms (especially to chronic effects)

Routes of entry will determine the required PPE that is necessary to keep you safe.





Summary
Controlling Exposure to Hazards



Remember, laboratory safety and security are a shared responsibility. It is crucial to communicate and collaborate with your colleagues and instructors to maintain a safe and secure environment. By following these guidelines, you will minimize risks and promote a culture of safety in the laboratory.

Thank YOU for your attention
For more information you can read

Laboratory biosafety manual (text book) or (pdf book)
10th edition , WHO.Geneva 2018.